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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,029	02/03/2006	Hartmut Hibst	284810US0PCT	9923
22850	7590	09/05/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER PATEL, SMITA S	
			ART UNIT 4162	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/567,029	Applicant(s) HIBST ET AL.	
	Examiner SMITA PATEL	Art Unit 4162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/06/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the application filed on February 3, 2006.
2. Claims 7-12 are under examination and 1-6 are cancelled.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claim 7** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites the limitations “ may comprise heterogeneous catalysts” and "optionally" which fails to provide specific on the scope of the limitation. Appropriate corrections are required

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

Art Unit: 4162

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 7-12** are rejected under 35 U.S.C. 102(e) as being anticipated by Hibst et al (US PG PUB No.: 2004/0147393 A1)

As per Claim 7, Hibst teaches a process for preparing a multimetal oxide composition, in which a mix solution is produced continuously in a solvent from a required starting compounds of the elemental constituents of the multimetal oxide composition, the mix solution is fed continuously into drying apparatus for removing solvent and the solid obtained is treated thermally at elevated temperature, with the thermal treatment comprising a calcination at from 200 to 1200° C, wherein at least two physically separate part solutions each containing partial amounts of the required starting compounds of the elemental constituents of the multimetal oxide composition in dissolved form are firstly prepared, at least two part solution streams are produced from the two or more part solutions, the two or more part solution streams are combined to form a total solution stream, the total solution stream is passed through a mixing zone in which mix solution stream comprising the total amount required starting compounds in dissolved form is formed, the mix solution stream is either broken up into fine droplets in the mixing zone or the mix solution stream is discharged from the mixing zone and then broken up into fine droplets, the fine droplets of mix solution are dried by contact with hot gas and the solid obtained is treated thermally at elevated temperature with the thermal treatment comprising a calcination at from 200 to 1200°C.

Art Unit: 4162

Hibst further teaches examples that define the process for preparing a multimetal oxide composition M:

Solution A was prepared by containing 4,000 ml of water that was heated at 80° C in glass vessel, 706.2 g of ammonium heptamolybdate having MoO_3 content were dissolved and then 141.0 g of ammonium metavanadate having V_2O_5 were stirred into and dissolved therein. Solution A having total volume of 4,500 ml.

Solution B was prepared containing 221.28g of niobium ammonium oxalate having Nb content dissolved in 1,000 ml of water which had been heat treated at 80° C. Solution B having total volume of 1,500 ml (considered two separate solutions of the chemical element present in the catalyst and optionally of dispersions of inorganic support materials, page 12 paragraph [0222-0223]).

Two solutions A and B were subsequently pumped continuously by means of two ProMinent laboratory metering pumps via Y-shaped plastic T-piece. The three tubular parts of the T-piece each had an internal diameter 5 mm and the length of 38 mm.

The solution A was conveyed at flow rate of 1,500 ml/h and the solution B was conveyed at a flow rate of 500 ml/h. In the interior of the T-piece, the two solution were combined to give total solution stream of 2,000 ml/h which flowed into the outlet piece of the T-piece. A static mixer model SMXS from Sulzer Chemtech was located in the latter (piece (considered continuously metering the at least two different solutions I predefined ratio into mixing apparatus in which they are homogeneously mixed, pages 12-13, paragraph [0224]) .

Art Unit: 4162

The end outlet piece of the T-piece was connected directly to the atomizer head of spray dryer which atomized the mix solution stream fed in (droplet size of 30 μM).

Within the atomizer head, which was located in the center of the hot air distributor affixed at the top of the spray dryer, the mix solution stream flowed through 15 cm long connecting line having an internal diameter of 6 mm directly onto atomizer disk. The entire 6,000 ml of total solution stream were able to spray dried over a period of 3 hours. Solution A and B were converted into essentially homogenous mix solution stream. It took about less than ten seconds from combination of the solutions to dry powder. 150 g of resulting spray-dried powder were heated from room temperature to 275 °C at heating rate of 5° C/min in air in rotary sphere furnace (considered drying the mixture removed from the apparatus and recovering dried mixture, page 13 paragraphs [0224 and 0225]).

Immediately afterwards, powders was heated from 275° C to 650° C at a heating rate of 2° C/min in a stream of molecular nitrogen and this temperature was held for 6 hours while maintaining the flow of nitrogen. The powder was subsequently allowed to cool naturally to 25° C while maintaining flow of nitrogen. A black calcined multimetal oxide active composition M was obtained. The calcined material was milled and 75 g of resulting powder were applied to 152 g of spherical support bodies (considered optionally shaping and optionally calcining mixture to give the solid, page 13 paragraphs [0226-0227]).

This example was repeated but the part solution stream A was 3000 ml/h (instead of 1500 ml/h) and the part solution B was 1000 ml/h (instead of 500 ml/h). In addition the

Art Unit: 4162

inlet temperature of the spray dryer was set to 400° C instead of 320° C. In this case it took about 5.5 seconds from combining the solutions to spray-drying and the 6000 ml of total solution stream were spray dried over a period of 1.5 hours (considered changing ratios and repeating step till dried mixture was obtained, page 13 paragraphs [231-0232]).

As per Claim 8, Hibst teaches a process for preparing a multimetal oxide composition above in Claim 7 wherein the time period between mixing the solutions and drying is less than 10 seconds (encompasses applicant's claimed range of less than 10 minutes, page 13 paragraph [0225]).

As per Claim 9, Hibst teaches a process for preparing a multimetal oxide composition above in Claim 7, wherein the drying is performed by spray drying (page 13 paragraphs [0224-0226]).

As per Claim 10, Hibst teaches a process for preparing a multimetal oxide composition above in Claim 7, wherein solids produced 150 g (encompassed applicant's claimed range from 0.1 to 500 g, page 13 paragraph [0226]).

As per Claim 11, Hibst teaches a process for preparing a multimetal oxide composition above in Claim 7 which is similar to applicant's disclosure which included two solutions were pumped continuously by means of two ProMinent metering pumps via two separate plastic hoses into two inlet pieces of Y-shaped plastic T-piece, therefore the process performed for preparing multimetal oxide is expected to possess similar characteristics such as ratio is set and changed by central computer control of the output of pumps.

Art Unit: 4162

As per Claim 12, Hibst teaches a process for preparing a multimetal oxide composition above in Claim 7 wherein the catalyst bed can be a fixed bed, a moving bed or fluidized bed where shaping can be carried out, for example of extrusion or tableting in the case of all-active catalysts or by application to a support body. This is further explained the example described, the calcined material was milled and 75 g of resulting powder were applied to 152 g of spherical support bodies (page 5 paragraph [0074-0075] and page 13 paragraph [0227-0228]).

5. **Claims 7 and 11-12** are rejected under 35 U.S.C. 102(b) as being anticipated by Claus et al (Journal-Miniaturization of screening devices for the combinational development of heterogeneous catalysts, Catalysis Today 67published 2001, pages 319-339).

As per Claim 7, Claus et al teaches a process for production of high-throughput screening of combinational libraries where a catalyst library was prepared via the incipient wetness method by the combination of different amounts of Pt, Zr, and V via their acetylacetonates, on Al_2O_3 by means of an automatic liquid handler (considered at least two different element compounds of chemical elements present in the catalyst and optionally of dispersion of inorganic support materials). The library contains 36 Pt/Zr/V/ Al_2O_3 catalysts. After dissolving the Pt, Zr and V precursors in CHCl_3 , the calculated volumes of the precursor solutions were mixed and diluted followed by soaking Al_2O_3 by the mixture (considered mixing in the apparatus at least two different

Art Unit: 4162

element compounds). After drying at ambient temperature (page 326, section 3.2.1) considered drying the mixture and removed), the precursors were pretreated by calcination in air for 3 hrs at 450° C in the channels of the monolithic reactor (considered optionally calcining mixture to give solid, page 326 section 3.2.1). The catalysts preparation procedure is carried out in parallel for 35 catalysts which can be produced per day being in accordance with the time for screening these catalysts under different reaction condition which includes residence time, reactant concentration, reactor temperature and pressure are varied and controlled during the screening. The prototype consists of 35 micro reactors where each micro reactor is filled with microstructured inlay containing one catalyst as catalytic active coating on top of its microchannels. The reactants flow through the microchannels of the microstructured inlays, react on the catalytic active surface of the microchannels and the products are withdrawn through the outlets. The reactor module design allows the use of replaceable microstructured catalyst inlays made of different materials such as metals, silicon, ceramics and glass and allows many different catalyst synthesis procedures as well as microchannel geometries being essential to the generation of suitable catalyst libraries for different heterogeneous catalyzed reactions. The catalysts can be easily removed with new sets of catalysts. All the parameters characterizing the catalyst libraries are registered in the database which is controlled by PC (considered changing ratios and repeating until N different dried mixtures are obtained, page 328, section 4.1, pages 330-331 section 4.3).

Art Unit: 4162

As per Claim 11, Claus et al teaches a process for production of high-throughput screening of combinational libraries as described in above in Claim 7, wherein the parameters characterizing the catalyst libraries are registered in the database which is controlled by PC (considered the ratio is set up and changed by central computer control, page 330, sections 4.2 and 4.3).

As per Claim 12, Claus et al teaches a process for production of high-throughput screening of combinational libraries as described in above in Claim 7, where solids obtained are further tested in methane oxidation at 450° C for desired catalytic activity (page 326-327, section 3.2.2).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

European Patent# 06033836 A1 Takashi et al.

US PGPUB No.: US 2003/0035756 A1 Nelson et al

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SMITA PATEL whose telephone number is (571)270-5837. The examiner can normally be reached on Monday-Thursday, 8:00-5:00pm.

Art Unit: 4162

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SP, Art Unit 4162

/Jennifer McNeil/

Supervisory Patent Examiner, Art Unit 4162